

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

TOY SPHERE WITH CARD ELEMENTS SLIDABLY DISPOSED TO A PERIPHERY THEREOF

Patent Number: CA2182927

Publication date: 1998-02-09

Inventor(s): CHANG HONG-LING (TW)

Applicant(s): CHANG HONG LING (TW)

Requested Patent: CA2182927

Application Number: CA19962182927 19960808

Priority Number(s): CA19962182927 19960808; EP19960112574 19960803

IPC Classification: A63F9/08

EC Classification: B23K26/08E2B, C21D1/09, B23K26/03

Equivalents:

Abstract

Data supplied from the esp@cenet database - I2

1 TOY SPHERE WITH CARD ELEMENTS SLIDABLY DISPOSED TO A2 PERIPHERY THEREOF3 ABSTRACT OF THE DISCLOSURE

4 A toy sphere includes three circular members and each
5 of which has an axis perpendicular with each other, the three
6 circular members sharing a common center, each of the three
7 circular members having a track defined in an outer periphery
8 thereof and each of the tracks communicating with each other
9 at intersections thereof, a plurality of tile elements each
10 having a lower portion and an upper portion with a neck
11 connected therebetween such that the lower portion and the
12 neck of each of the tile elements are slidably received in
13 the tracks.

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

1 TOY SPHERE WITH CARD ELEMENTS SLIDABLY DISPOSED TO A
2 PERIPHERY THEREOF

3 BACKGROUND OF THE INVENTION

4 1. Field of the Invention

5 The present invention relates to a toy sphere and
6 more particularly, to a toy sphere with tile elements
7 slidably disposed to a periphery thereof and a user may shift
8 the tile elements disposed thereon to arrange the tile
9 elements into a desired form.

10 2. Brief Description of the Prior Art

11 A good toy should have some characters which includes:

12 (1) The toy should be safe such that there is no
13 possible harm for a user operating the toy.

14 (2) The toy should have a feature of stimulating the
15 brainpower of the user.

16 (3) The toy is able to be operated in a variety of
17 ways to operate it such that the user can concentrate his/her
18 attention on the toy and enjoy the toy.

19 One of such typical toys is called "Rubik's Cube" or
20 "magic cube" which is a cube and each one of six sides of the
21 magic cube is divided into nine elements with the same color,
22 every row and every column of the elements in each side can
23 be respectively rotated about a vertical axis and a
24 horizontal axis. Before operating the magic cube, all of the
25 elements are arranged to be an irregular form, that is each
26 one of six sides has more than two colors of elements, a user
27 is then required to operate the magic cube to arrange the
28 colors of the elements to be a certain form, such as to

1 arrange all the elements with the same color on the same
2 side of the cube. The magic cube only provides the user the
3 chance to rotate the elements, the user cannot shift the
4 elements by sliding on any one of the six sides.

5 Another toy is a rectangular plate on which nine
6 positions are defined, each one of the nine positions has the
7 same size and there have eight tiles disposed to the plate. A
8 user can shift one of the tiles to the remaining empty
9 position and by this manner the eight can be re-arranged to
10 be a certain pattern. This toy only provides the user a
11 chance to slide the tiles.

12 The present invention intends to provide an improved
13 toy which is a sphere with tile elements disposed thereto
14 wherein the sphere is composed of three circular members and
15 each of the circular members are perpendicular with each
16 other. The tile elements can have their positions changed by
17 moving along the three circular members so as to mitigate
18 and/or obviate the above-mentioned problems.

SUMMARY OF THE INVENTION

20 The present invention provides a toy sphere which
21 includes three circular members sharing the same center, each
22 of the three circular members having an axis and the three
23 axes being arranged to be perpendicular with each other. Each
24 one of the three circular members has a track defined in an
25 outer periphery thereof and the three tracks communicate with
26 each other at intersections. A plurality of tile elements
27 each have a lower portion and an upper portion, with a neck
28 connecting the lower portion and the upper portion. The lower

1 arrange all the elements with the same color on the same
2 side of the cube. The magic cube only provides the user the
3 chance to rotate the elements, the user cannot shift the
4 elements by sliding on any one of the six sides.

5 Another toy is a rectangular plate on which nine
6 positions are defined, each one of the nine positions has the
7 same size and there have eight tiles disposed to the plate. A
8 user can shift one of the tiles to the remaining empty
9 position and by this manner the eight can be re-arranged to
10 be a certain pattern. This toy only provides the user a
11 chance to slide the tiles.

12 The present invention intends to provide an improved
13 toy which is a sphere with tile elements disposed thereto
14 wherein the sphere is composed of three circular members and
15 each of the circular members are perpendicular with each
16 other. The tile elements can have their positions changed by
17 moving along the three circular members so as to mitigate
18 and/or obviate the above-mentioned problems.

19 SUMMARY OF THE INVENTION

20 The present invention provides a toy sphere which
21 includes three circular members sharing the same center, each
22 of the three circular members having an axis and the three
23 axes being arranged to be perpendicular with each other. Each
24 one of the three circular members has a track defined in an
25 outer periphery thereof and the three tracks communicate with
26 each other at intersections. A plurality of tile elements
27 each have a lower portion and an upper portion, with a neck
28 connecting the lower portion and the upper portion. The lower
29

1 portion and the neck of each of the tile elements are slidably
2 engaged with the tracks such that the tile elements can be
3 shifted along the three tracks.

4 It is an object of the present invention to provide a
5 toy sphere on which a plurality of tile elements are shifted
6 along tracks defined in an outer periphery of the toy sphere.

7 It is another object of the present invention to
8 provide a toy sphere on which tile elements can be shifted
9 along a single, respective track or be shifted to other
10 tracks.

11 Other objects, advantages, and novel features of the
12 invention will become more apparent from the following
13 detailed description when taken in conjunction with the
14 accompanying drawings.

15 BRIEF DESCRIPTION OF THE DRAWINGS

16 Fig. 1 is a perspective view of a toy sphere in
17 accordance with the present invention;

18 Fig. 2 is an exploded view of a first embodiment of
19 the toy sphere in accordance with the present invention;

20 Fig. 3 is a side elevational view, partly in section,
21 of a tile element received in a track;

22 Fig. 4 is a view similar to Fig. 3 to show another
23 type of tile element received in a track, and

24 Fig. 5 is an exploded view of a second embodiment of
25 the toy sphere in accordance with the present invention.

26 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

27 Referring to the drawings and initially to Figs. 1
28 through 3, a toy sphere in accordance with the present
29

1 invention generally includes three circular members 1a, 2a
2 and 3a which share the same center. Each of the three circular
3 members 1a, 2a and 3a has an axis perpendicularly extending
4 through a center of a plane where the respective circular
5 member 1a/2a/3a is located and the three axes are arranged
6 to be perpendicular with each other. Each one of the three
7 circular members 1a, 2a and 3a has a track defined in an
8 outer periphery thereof and the three tracks communicate with
9 each other at intersections therebetween.

10 The toy sphere is composed by four one-fourth sphere
11 portions 30, each one of the one-fourth sphere portions 30
12 including a part of each of the three circular members 1a,
13 2a, 3a. As seen in Fig. 2, the one-fourth sphere portion 30
14 includes a part 301 of the circular member 1a and a part 303
15 of the circular member 3a, each of the two parts 301/303 is a
16 half circular section of the respective circular member
17 1a/3a. A part 302 of the circular member 2a is connected
18 between a respective middle point of the two parts 301, 303
19 curved peripheries and each of the curved peripheries 301,
20 302, 303 having an upper layer 31 and a lower layer 32 and a
21 perpendicular connecting portion 34 connected between the
22 upper layer 31 and the lower layer 32. The lower layer 32
23 extends longer than the upper layer 31 such that any two
24 opposite upper layers 32 define a track therebetween, such as
25 positions where the numerals 322, 324 lead to. The lower
26 layer 32 has studs 306 extending laterally therefrom and
27 recesses 38 defined laterally therein such that the two
28 adjacent one-fourth sphere portions 30 can be combined
29

1 together by mutually inserting the studs 36 into the recesses
2 38. Furthermore, each of the studs 36 has a flange 362 (see
3 Fig. 3) extending radially from a periphery thereof so as to
4 securely received in the respective recess 38, by means of an
5 interference fit.

6 A plurality of tile elements 20 each have a lower
7 portion 24 and an upper portion 22, a neck 26 connected
8 between the lower portion 24 and the upper portion 22 such
9 that the lower portion 24 and the neck 26 are slidably
10 engaged with the tracks 322, 324. The upper portion 22 has a
11 flat upper surface.

12 Accordingly, when a user (not shown) plays with the
13 toy sphere, he/she is required to shift the tile elements 20
14 along the three tracks of the circular members 1a, 2a, 3a to
15 arrange the tile elements 20 into a certain or required
16 pattern. The tile elements 20 can be shifted along a certain
17 track or be transferred to other tracks at the intersecting
18 positions of two tracks such that the toy sphere has variety
19 of ways in which the tile elements 20 thereof can be shifted
20 and is suitable to be operated by children or adults.

21 Fig. 4 shows another embodiment of the tile element
22 20' wherein an upper surface of the tile element 20 is an
23 arcuate surface.

24 Fig. 5 shows a second embodiment of the toy sphere
25 wherein the toy sphere is composed eight one-eighth sphere
26 portions 40, each of which is configured as a half of the
27 one-fourth sphere portions 30 shown in Fig. 2 when divided
28 from a central center of the track 324 of the part 302 of the
29

1 together by mutually inserting the studs 36 into the recesses
2 38. Furthermore, each of the studs 36 has a flange 362 (see
3 Fig. 3) extending radially from a periphery thereof so as to
4 securely received in the respective recess 38, by means of an
5 interference fit.

6 A plurality of tile elements 20 each have a lower
7 portion 24 and an upper portion 22, a neck 26 connected
8 between the lower portion 24 and the upper portion 22 such
9 that the lower portion 24 and the neck 26 are slidably
10 engaged with the tracks 322, 324. The upper portion 22 has a
11 flat upper surface.

12 Accordingly, when a user (not shown) plays with the
13 toy sphere, he/she is required to shift the tile elements 20
14 along the three tracks of the circular members 1a, 2a, 3a to
15 arrange the tile elements 20 into a certain or required
16 pattern. The tile elements 20 can be shifted along a certain
17 track or be transferred to other tracks at the intersecting
18 positions of two tracks such that the toy sphere has variety
19 of ways in which the tile elements 20 thereof can be shifted
20 and is suitable to be operated by children or adults.

21 Fig. 4 shows another embodiment of the tile element
22 wherein an upper surface of the tile element 20 is an
23 arcuate surface.

24 Fig. 5 shows a second embodiment of the toy sphere
25 wherein the toy sphere is composed eight one-eighth sphere
26 portions 40, each of which is configured as a half of the
27 one-fourth sphere portions 30 shown in Fig. 2 when divided
28 from a central center of the track 324 of the part 302 of the
29

1 circular member 2a. Each of the one-eighth sphere portions 40
2 also has an upper layer 42 and a lower layer 43 and, a
3 perpendicular connecting portion 401 is connected between the
4 corresponding upper layer 42 and the lower layer 43 such that
5 a track 44 is defined between the upper layer 42 and the
6 lower layer 43. The lower layer 43 has a plurality of studs
7 46 extend laterally therefrom and recesses 48 defined
8 laterally therein such that each of two one-eighth sphere
9 portions 40 of the eight one-eighth sphere portions 40 can be
10 combined together by receiving the studs 46 into the
11 respective recesses 48 in the way described relating to Fig.
12 2. Also, the tile element 20" has a neck 26' with a square
13 cross-section and the tile element 20 in Fig. 2 has a neck 26
14 with a round cross-section.

15 Although the invention has been explained in relation
16 to its preferred embodiment, it is to be understood that many
17 other possible modifications and variations can be made
18 without departing from the spirit and scope of the invention
19 as hereinafter claimed.

20

21

22

23

24

25

26

27

28

29

1 The embodiment of the invention in which an exclusive
2 property or privilege is claimed are defined as follows:

3 1. A toy sphere comprising:

4 three circular members which share the same center,
5 each of the three circular members having an axis and said
6 three axes being arranged to be perpendicular with each
7 other, each one of said three circular members having a track
8 defined in an outer periphery thereof and said three tracks
9 communicating with each other at intersections, and

10 a plurality of tile elements each having a lower
11 portion and an upper portion, a neck connected between said
12 lower portion and said upper portion, said lower portion and
13 said neck being slidably received in said tracks.

14 2. The toy sphere as claimed in claim 1 wherein said sphere
15 is composed by four one-fourth sphere portions, each of the
16 one-fourth sphere portions having two semi-circular curved
17 peripheries and a one-fourth circular curved periphery con-
18 nected between said two semi-circular curved peripheries,
19 each of said curved peripheries having an upper layer and a
20 lower layer, said lower layer being longer than said upper
21 layer, said lower layer having studs extending laterally
22 therefrom and recesses defined laterally therein such that
23 said two adjacent one-fourth sphere portions can be combined
24 together by mutually inserting said studs into said recesses
25 and said track is defined between by said two upper layers.

26 3. The toy sphere as set forth in claim 1 wherein each of
27 said studs has a flange extending radially from a periphery
28 thereof.

2182927

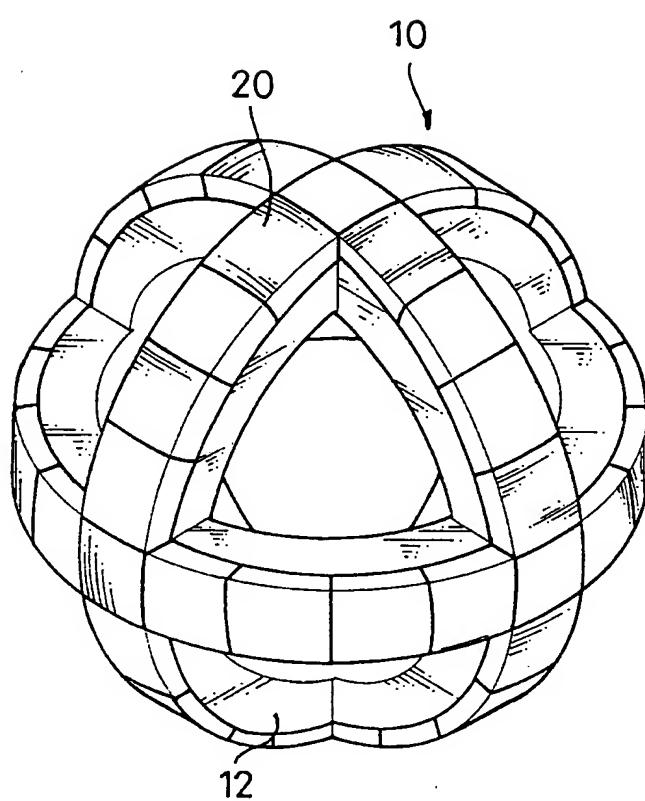


FIG.1

2182927

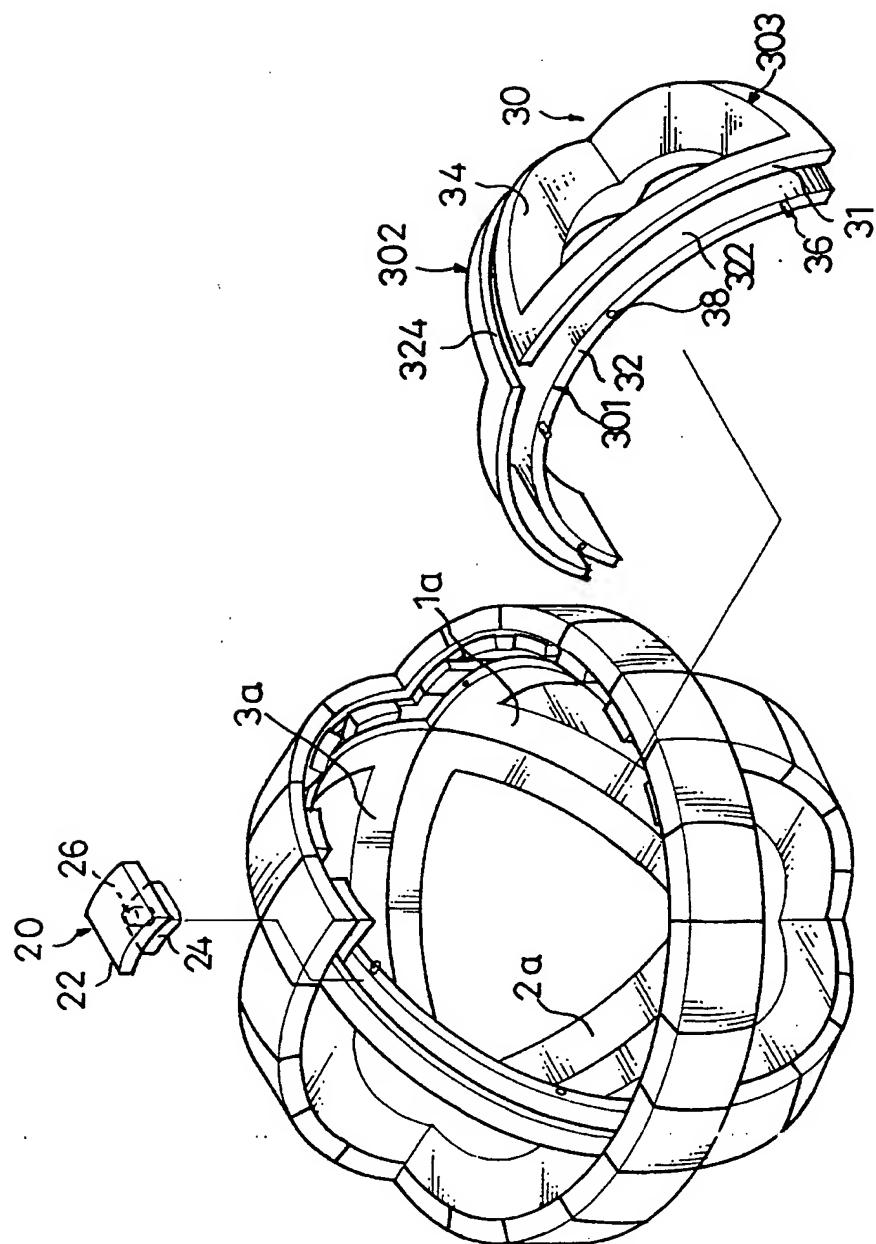


FIG. 2

2182927

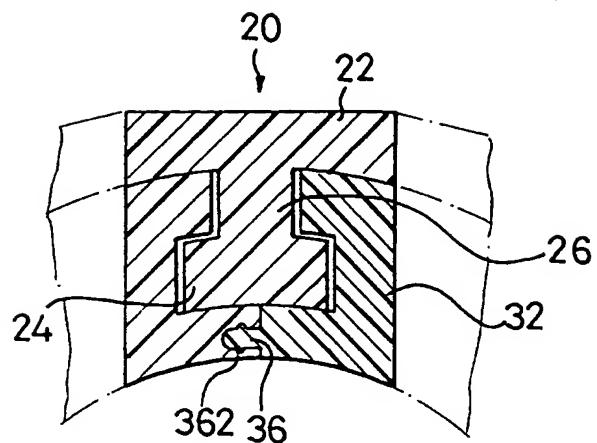


FIG. 3

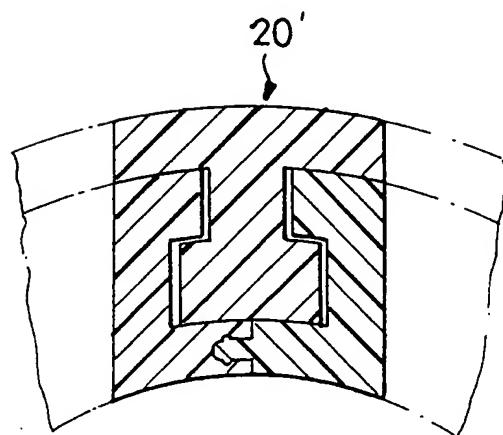


FIG. 4

2182927

FIG. 5

